

[MUSIC PLAYING]

ROBERT

MUTTER:

As radiation oncologists, we use modalities called radiation therapy that are very effective at treating cancer and have been used for many, many years to do so. It used to be we used to give radiation over five to six weeks, which is a big time commitment for patients. What we've learned over the past several years is that we're actually able to give radiation therapy for breast cancer over shorter treatment regimens, and it's just as effective at curing the cancer. Some patients with very favorable breast cancer, we're actually giving the radiation in as few as three days.

Patients that have residual disease after preoperative chemotherapy have very high risks of recurrence with our standard treatment modalities. One of the things that we've been working on the laboratory is finding ways to make radiation more effective in these patients that have chemo-resistant disease, because we know that this disease is not only chemo-resistant, it's likely also more radio-resistant.

And so we've been coming up with new strategies in the laboratory where we combine new drugs with radiation to make the treatment more efficacious. We've developed an interesting clinical trial where we're combining this drug, M6620, with radiation therapy in patients with chemo-resistant triple negative breast cancer, as well as very high-risk chemo-resistant ER-positive breast cancer, with the hopes that we'll be able to not only achieve better local regional control, but also prevent the development of distant metastases.

Proton beam therapies are very exciting treatment modality for breast cancer because protons have this ability to stop on a dime, which means that we can give them just enough energy to travel to treat the breast, or the tissues in the lymph nodes that are left behind, but we're able to spare the normal tissues like the heart and lungs.

Brachytherapy is a another specialized form of radiation therapy in which the radiation is given off internally. Our surgical colleagues, following lumpectomy, they put a device into the breast in the lumpectomy cavity. And then when patients come

down to our department the next day, we use this device to plan the radiation therapy, in which we actually have radioactive seeds and give off the radiation internally.

We're really excited here at Mayo about improving our treatment for patients with high-risk breast cancer. And so now, we typically give radiation therapy by itself. But I think in the future, that we're going to be actually combining radiation therapy with newer drugs to enable-- that will work synergistically to improve treatment outcomes for patients.